

Remarks

This Response is considered fully responsive to the Office Action mailed October 5, 2007. Claims 1-24 were pending in the application. Claims 1-24 stand rejected. In this Response, claim 2 is canceled, and new claims 25 and 26 are added. Furthermore, claims 1, 3, 6-8, and 19 are amended. Support for the amendments can be found throughout the originally filed specification. Support for amended claim 1, for example, can be found in originally filed claims 2 and 3 and in the abstract of the originally filed application. Support for amended claim 19, for example, can also be found in originally filed claim 3 and in the abstract of the originally filed application. No new matter has been added. The Specification has also been amended. Claims 1 and 3-26 are now pending in the application. Reexamination and reconsideration are requested.

Amendments to the Specification

Applicant has re-entered the amendment previously made in a preliminary amendment as requested by the Examiner. The previous amendment filed in the preliminary amendment incorrectly identified two different amendments as being made to the same paragraph number. Applicant has corrected that mistake by correctly identifying each of the paragraphs being amended.

Rejections Under 35 U.S.C. § 112

The Examiner has rejected claims 1-9 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter. Applicant respectfully traverses this rejection for at least the following reasons. Applicant has amended claims 1 and 6-8 in order to satisfy the Examiner. Accordingly, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of claims 1-9.

Rejections Under 35 U.S.C. § 102

The Examiner has rejected claims 1-3, 7, 10-12, 18-22, and 24 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,381,642 to O'Donnell, et al. ("the O'Donnell reference"). Applicant respectfully traverses the rejection for at least the following reasons.

Claim 1, from which claims 3 and 7 depend, recites "a congestion analysis module gathering at least a portion of the data traffic statistics for the ports, performing computations with the gathered data traffic statistics to detect congestion at the ports, and updating the

congestion records for the ports with detected congestion to indicate a congestion type based upon the performed computations.”

The O’Donnell reference discloses a host client that issues a Set Monitor Command to a switch. The Set Monitor Command identifies one or more ports of the switch to be monitored and specific port-operational parameters that are to be monitored for each of the identified ports. The switch provides a counter for each parameter of each monitored port. Each counter sums the number of times a particular parameter occurs at a particular port until the switch receives a Read Port Statistics Command from the host client. In response to the Read Port Statistics Command, the switch returns the values of the counters to the host client. The individual counters returned to the host client identify a number of times each monitored parameter was identified by the switch. The counters, for example, identify the number of frames transmitted by each monitored port.

The O’Donnell reference does not disclose a module at the switch uses these counters to detect congestion or to identify a particular type of congestion. The Examiner incorrectly argues that the “frame pacing limit” counter corresponds to a determination of congestion. The O’Donnell reference states that the “frame pacing limit” counter determines a number of 2.5 microsecond units that frame transmission is blocked due to zero credit. The counter disclosed in the O’Donnell reference merely determines the number of times this particular condition occurs and is not used to determine whether congestion is occurring. The O’Donnell reference does not disclose using this counter to determine whether congestion is occurring, but merely forwards the value of the counter back to the host client.

The present application also states that transmit credits (TX_BB_Credit=0) levels by themselves are insufficient to determine whether congestion is occurring. In paragraph [0020], of the originally filed application, for example, the present application states the following:

When real device traffic in a fabric is fully loading a link, "TX_BB_Credit=0" conditions are detected quite often because much of the time the frame currently being transmitted is the frame which just consumed the last TX_BB_Credit for a port. However, based upon BB_Credit values alone, it would be improper to report the detection of congestion, e.g., a slow-draining device or a downstream over-utilized link. In contrast, if "TX_BB_Credit=0" conditions are detected at a port but link-utilization is found to be low, then chances are good that a slow-draining device, a congested downstream link, and/or a long-distance link configured with insufficient BB_Credit have been identified by the switch congestion analysis module. If "TX_BB_Credit=0" conditions are persistently

detected and link-utilization is concurrently found to be high, then chances are high that an over-subscribed device or an over-utilized link has been correctly identified by the analysis module.

[Emphasis added.]

While a management director of the switch increments the counters each time a particular port-operational parameter is detected, the O'Donnell reference does not disclose, teach, or suggest the management director performing computations with the gathered data traffic statistics to detect congestion at the ports. The counters only provide an indication of how many times a particular parameter has been detected, not whether congestion of the port has been detected.

Furthermore, the O'Donnell reference also fails to disclose, teach, or suggest “updating the congestion records for the ports with detected congestion to indicate a congestion type based upon the performed computations.” As stated above, the O'Donnell reference merely discloses using counters to provide an indication of how many times a particular parameter has been detected. The O'Donnell reference does not disclose, teach, or suggest detecting a congestion type or updating a congestion record to indicate a congestion type. Thus, the O'Donnell reference fails to anticipate claims 1, 3, or 7.

Claim 1, from which claims 3 and 7 depend, has also been amended to recite that the congestion analysis module periodically repeats the gathering, the performing, and the updating operations upon expiration of a same time period. This limitation has been incorporated into claim 1 from canceled claim 2.

The Examiner argues that column 4, lines 63-67 of the O'Donnell reference disclose this limitation. This section of the O'Donnell reference states that a Read Port Statistic Command is issued by the host client as a function of the expiration of a predetermined time interval after the management director has accepted a previously sent Set Monitor Command. This time interval is an interval after which the host client directs the management director to return the values of counters for operational parameters being monitored at the switch. The interval is not an interval for which the management director repeats its gathering, performing, and updating functions. The beginning of the time period corresponds to the management director of the switch accepting and beginning to monitor operational parameters specified by the command. The end of the time period corresponds to the management director stopping its monitoring of the operational

parameters and forwarding counters for those operational parameters to the host client. Further, as discussed above, the O'Donnell reference does not disclose, teach, or suggest repeat the gathering, performing, and updating operations because the O'Donnell reference fails to disclose, teach, or suggest performing these operations as recited in claim 1.

The O'Donnell reference fails to identically disclose each and every limitation of claims 1, 3, or 7 and thus fails to anticipate claims 1, 3, or 7. Accordingly, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of claims 1, 3, and 7 and allow claims 1, 3, and 7.

Claim 10, from which claims 11, 12, and 18 depend, recites receiving a first set of congestion data from the switches in the fabric, the first set comprising port-specific congestion data for the ports in the switches at a first time; receiving a second set of congestion data from the switches in the fabric, the second set comprising port-specific congestion data for the ports in the switches at a second time; and processing the first set and the second set of congestion data to determine a level of congestion at the ports.

As discussed above, the O'Donnell reference discloses a switch monitoring operational parameters for its ports, incrementing counters corresponding to the individual operational parameters to count the number of times the individual parameters are detected and returning the values of the counters to a host client. As discussed above, the O'Donnell reference does not disclose receiving sets of "congestion data" from the switches. Rather, the host client receives counters of individual operational parameters. Further, the O'Donnell reference does not disclose, teach, or suggest what the host client does with these counters when it receives them. Specifically, the O'Donnell reference fails to disclose, teach, or suggest that the host client processes a first and second set of congestion data to determine a level congestion at the ports. The O'Donnell reference fails to disclose detecting congestion at all and further says absolutely nothing about a "level of congestion" being determined.

Claim 19, from which claims 20-22 and 24 depend, recites at each switch in the fabric, monitoring bi-directional traffic pattern data for each switch port for indications of congestion, indicating congestion for one of the switch ports, and updating a congestion record for the congested port to indicate a congestion type based on the monitored traffic pattern data;

operating the switches to transfer at least portions of the congestion records from each of the switches to a network management platform; and at the network management platform, processing the transferred portions of the congestion records to determine a congestion status for the fabric.

As discussed above, the O'Donnell reference discloses a switch monitoring operational parameters for its ports, incrementing counters corresponding to the individual operational parameters to count the number of times the individual parameters are detected and returning the values of the counters to a host client. As discussed above, the O'Donnell reference does not disclose, teach, or suggest detecting congestion or a congestion type at each switch in a fabric. Rather, the switch forwards counters of individual operational parameters to a host client. Further, the O'Donnell reference does not disclose, teach, or suggest what the host client does with these counters when it receives them. Specifically, the O'Donnell reference fails to disclose, teach, or suggest that the host client processes a transferred portion of a congestion record to determine a congestion status for the fabric. The O'Donnell reference fails to disclose detecting congestion or a congestion type at all and further says absolutely nothing about a "congestion status" being determined for the fabric.

Claims 1, 3, 7, and 8 are rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Publication No. 2005/0030893 to Dropps et al., ("the Dropps reference"). Applicant respectfully traverses the rejection for at least the following reasons.

The Dropps reference discloses a fibre channel switch that updates a counter if a frame cannot be transmitted from a transmit side of the switch due to a lack of credit or if a receive buffer is full on a receive side of the switch. The counter is compared to a threshold and issues an interrupt if the counter exceeds the threshold. If the counter exceeds the threshold, the reference indicates that congestion is detected. (See, e.g., Figs. 6 and 8, paragraphs [0038], [0039], [0160] – [0164], and [0176] – [0178].)

The Dropps reference defines "over subscription" as "data arriving at a Fibre Channel port faster than the port can transmit it" and notes that over subscription will cause congestion at the ports that are sending frames routed to the oversubscribed port. (See, e.g., paragraph [0082].) The reference discloses determining over subscription based on a source port data rate, a transmit

port data rate, and an entry corresponding to a number of frames to be transmitted from the transmit port at a given time. (See, e.g., paragraph [0045].)

Claim 1, from which claims 3, 7, and 8 depend, has been amended to recite that the congestion analysis module periodically repeats the gathering, the performing, and the updating upon expiration of a same time period. The Dropps reference fails to disclose, teach, or suggest such a limitation and thus does not identically disclose every limitation of the rejected claims. Accordingly, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of claims 1, 3, 7, and 8 and allow claims 1, 3, 7, and 8.

Rejections Under 35 U.S.C. § 103

Claims 6, 9, and 16-17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over O'Donnell in view of U.S. Patent No. 7,275,103 to Thrasher et al., ("the Thrasher reference"). Applicant respectfully traverses the rejection for at least the following reasons.

Claims 6 and 9 depend from claim 1, which Applicant believes to be patentable for at least the reasons stated above with respect to claim 1. Applicant further believes that the Thrasher reference does not overcome the deficiencies discussed above with respect to the O'Donnell reference. Accordingly, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of claims 6 and 9 and allow claims 6 and 9.

Claims 16 and 17 depend from claim 10, which Applicant believes to be patentable for at least the reasons stated above with respect to claim 10. Applicant further believes that the Thrasher reference does not overcome the deficiencies discussed above with respect to the O'Donnell reference. Accordingly, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of claims 16 and 17 and allow claims 16 and 17.

Claims 13 and 14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over O'Donnell in view of Dropps. Applicant respectfully traverses the rejection for at least the following reasons.

Claims 13 and 14 depend indirectly from claim 10, which Applicant believes to be patentable for at least the reasons stated above with respect to claim 10. Applicant further believes that the Dropps reference does not overcome the deficiencies discussed above with respect to the O'Donnell reference. Accordingly, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of claims 13 and 14 and allow claims 13 and 14.

Claims 4, 5, 15, and 23 are rejected under 35 U.S.C § 103(a) as being unpatentable over O'Donnell in view of Dropps and in further view of U.S. Patent No. 7,151,744 to Sarkinen et al., ("the Sarkinen reference"). Applicant respectfully traverses the rejection for at least the following reasons.

Claims 4 and 5 depend from claim 1, which Applicant believes to be patentable for at least the reasons stated above with respect to claim 1. Applicant further believes that the Sarkinen reference does not overcome the deficiencies discussed above with respect to the O'Donnell and Dropps references. Accordingly, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of claims 4 and 5 and allow claims 4 and 5.

Claim 15 depends indirectly from claim 10, which Applicant believes to be patentable for at least the reasons stated above with respect to claim 10. Applicant further believes that neither the Dropps reference nor the Sarkinen reference overcomes the deficiencies discussed above with respect to the O'Donnell reference. Accordingly, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of claim 15 and allow claim 15.

Claim 23 depends indirectly from claim 19, which Applicant believes to be patentable for at least the reasons stated above with respect to claim 19. Applicant further believes that the Sarkinen reference does not overcome the deficiencies discussed above with respect to the O'Donnell and Dropps references. Accordingly, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of claim 23 and allow claim 23.

New Claims

New claims 25 and 26 are added and are believed to recite a switch that is not disclosed or suggested in the O'Donnell reference, the Dropps reference, or the other references on record. Specifically, claims 25 and 26 depend from claim 1 and are believed to be patentable for at least the reasons described above with respect to claim 1. Support for the new claims can be found throughout the originally filed application. Claim 25, for example, corresponds to a limitation deleted from claim 1. Claim 26 is also supported at least in paragraphs [0025], [0043], and [0047] of the originally filed application. No new matter has been added.

Conclusion

Claims 1 and 3-26 are currently pending in the application. Applicant has fully responded to each and every objection and rejection in the Office action dated October 5, 2007

and believes that claims 1 and 3-26 are in a condition for allowance. Applicant therefore requests that a timely Notice of Allowance be issued in this case.

If the Examiner should require any additional information or believes any issues could be resolved via a telephone interview, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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